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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,419	12/19/2000	Andre C. Seznec	1662-25000JMH (POO-3078)	9553
22879	7590	01/18/2006	EXAMINER	
HEWLETT PACKARD COMPANY P O BOX 272400, 3404 E. HARMONY ROAD INTELLECTUAL PROPERTY ADMINISTRATION FORT COLLINS, CO 80527-2400			PAN, DANIEL H	
			ART UNIT	PAPER NUMBER
			2183	

DATE MAILED: 01/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,419

Applicant(s)

SEZNEC ET AL.

Examiner

Daniel Pan

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 22 and 23 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 11-15 and 17 is/are rejected.
- 7) ☒ Claim(s) 5, 7-10, 16 and 18-21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. Claims 1-23 remain for examination.
2. Upon further review and consideration on the Appeal Brief on 09/30/05, the finality of office action on 06/13/05 has been withdrawn. This is a non-final action in view of newly found art in order to allow applicant a chance to respond. Applicant had argued previously that Tran (5,752,259) taught a branch predictor [37], but the predictor [37] was not a multibank. Although Tran (5,752,259) taught a multibank (instruction cache 22), it is not the branch predictor [37].
3. In response to applicant's argument, a new reference (Tran 6,101,577) has been applied to show that a multibank [70] was implemented into the predictor [37] as well (see col.12, lines 58-67). Therefore, the new reference, Tran (6,101,577) shows Tran's predictor [37] was a multibank.
4. In view of the Appeal Brief filed on 06/13/05, PROSECUTION IS HEREBY REOPENED. New grounds of rejections are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and

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appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below (see the last page of this action):

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-4,6,1 1-15,17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tran (6,101,577) in view of Drako et al. (5,371,877).

6. As to claims 1,12, Tran disclosed a system including at least :

a) a branch predictor (see branch predictor unit 37 in fig.1 including multi bank prediction array (see banks 70 used within the branch predictor 37 in col.12, lines 58-

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62, see fig.4 for the dual banks) that was used for predictions of conditional branch instructions ;

b) a bank control unit (prediction unit 37) to ensure that two accesses to the bank array do not conflict (see how the branch prediction unit was used with the memory banks to resolve the conflict in col.13, lines 1-27) .

7. Tran did not specifically show that his memory bank was a single ported memory as claimed. However, Drako disclosed a system including a memory bank with a single port (see fig.2 bank 0 single port), see the single port bank in col.5, lines 21-2a). It would have been obvious to one of ordinary skill in the art to use Drako in Tran for including the single ported memory bank as claimed because the use of Drako could provide Tran the storage ability to accept specific access read and write request at a given memory bank port, thereby reducing the memory hardware, and it could be readily accomplished by configuring the interface parameters, such as the R/W port width, of the single-port memory banks of Drako into Tran so that the single-port memory banks of Drako could be recognized by Tran, and because one of ordinary skill in the art should be able to recognize the advantage of using a single port of a memory bank, such as one taught by Drako, to adapt to different type of the memory units (e.g. array, bank, cell, storage segment, etc.) in order to reduce the hardware estate, and therefore, the latency of the memory accessing, and for doing so, provided a motivation.

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8. As to claims 2,11,13, Tran also fetched at least two slot of instructions in one cycle (see the instruction blocks fetched during clock cycle 0 in col.9, line 67, col.10, lines 1-2).

9. As to claims 3,14, Tran also included a multiplexer (e.g. see the selector in col.12, lines 10-21).

10. As to claims 4,15, Tran also determined an index value (e.g. see the index in col.15, lines 7-13).

11. As to claims 6,17, Tran also used at least 2 bits to be a bank number (see the 0 and 1 banks, see freely selected bank number in col.12, lines 55-67, col.15, lines 1-3).

12. Claims 5,16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the bank identifier for the conditional branch that was different than the bank identifier for a conditional branch that was last used. Tran disclosed bank identifier (bank0-bank7), but it did not teach the determination of the difference of the bank identifier of the last used to access the prediction array.

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13. Claims 7-9 , 18-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the details of the comparison of the two bits value with the last used bank number.

14. Claims 10, 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. None of the prior art of record further teaches the pair of the 4-1 mux from the output of the single ported bank. Tran had a multiplexer (selector) , but it was neither a 4-1 mux nor a pair of 4-1 mux.

15. Claims 22,23 are allowable over the art of record. None of the prior art of record teaches the combined features of the generation of the index from the conditional instruction address, the selection of two bits form the index, the comparison of the two bits with previous bank number determined by the conditional branch previously used to access the prediction array, the use of the two bits as current bank number if the previous bank number differs, and the change of the bank number if the previous bank number is equal for a conditional branch to access the prediction array .

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Gaither et al. (4,453,212) is cited for the basic teaching in the use of index

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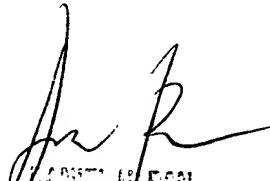
value to selected memory segments (see col.5, lines 8-50). Gaither et al. (4,453,212) and Drako et al. (5,371,877) have been cited on the record, therefore, copies are not being provided herein.

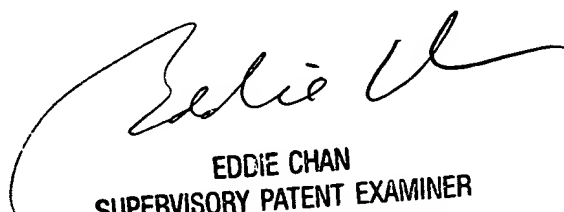
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dan Pan whose telephone number is 703 305 9696, or the new number 571 272 4172. The examiner can normally be reached on M-F from 8:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chan, can be reached on 703 305 9712, or the new number 571 272 4162. The fax phone number for the organization where this application or proceeding is assigned is 703 306 5404.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

21 Century Strategic Plan


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